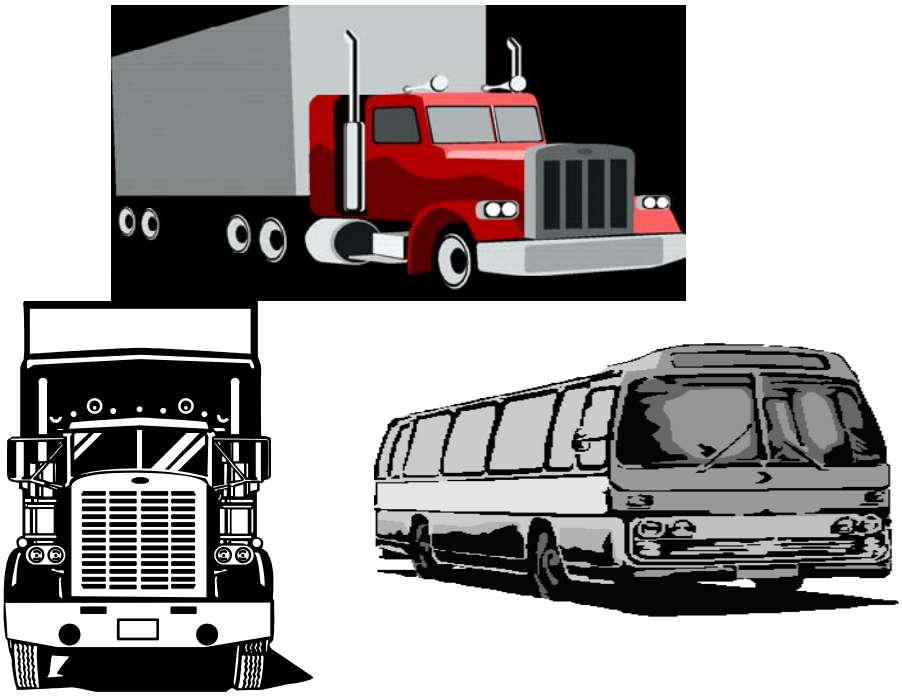
STATE OF UTAH

DEPARTMENT OF PUBLIC SAFETY

OFFICIAL SAFETY INSPECTION MANUAL
FOR
TRACTORS /TRAILERS/ BUSES
2004



STATE OF UTAH

DEPARTMENT OF PUBLIC SAFETY

OFFICIAL VEHICLE SAFETY INSPECTION MANUAL FOR TRACTOR /TRAILER/ BUS

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INTRODUCTION

The Utah Highway Patrol-Vehicle Safety Inspection office has compiled this manual from many different sources. The American Association of Motor Vehicle Administrators (AAMVA), Vehicle Inspection Subcommittee of the American Automobile Manufacturers Association (AAMA), National Transportation Safety Administration (NHTSA), Utah State Criminal and Traffic Code, Federal Motor Vehicle Safety Standards (FMVSS), Commercial Vehicle Safety Alliance (CVSA) and the Code of Federal Regulations (CFR's). In addition, the Safety Inspection office is advised by the Motor Vehicle Safety Inspection Advisory Council on the adoption and implementation of Safety Inspection Standards.

This manual contains minimum standards relating to motor vehicle safety. It is expected that individual inspectors, inspection managers, fleet inspection stations and public inspection stations involved with the Safety Inspection program be familiar with this manual. Every effort has been made to provide specific inspection recommendations and procedures that will allow for the safe operation of motor vehicles on Utah's highways.

The Safety Inspection staff is committed to the safety of the motoring public. We recognize that those involved with the Safety Inspection Program are also concerned with vehicle safety. This revised manual has changes that place more responsibility on owners for repairs of non-safety critical items. Many of these changes reflect the same requirements as the commercial motor vehicle industry.

In addition to changes to the manual, Safety Inspection is reviewing its operating policies and procedures. Utah law requires the Safety Inspection office to "investigate complaints" and to protect consumers from "unwanted or unneeded repairs or adjustments", 53-8-204 UCA. To protect the integrity of the Safety Inspection program, those who violate these provisions will be dealt with both civilly and criminally.

Safety Inspection encourages all those who participate in this program to become familiar with these rules. This program is only successful with the cooperation and determination of the many stations and inspectors found throughout the state. Safety Inspection looks forward to any comments, concerns or questions that may arise in carrying out our objective of safer vehicles for Utah's highways.

This Manual supersedes all previous manuals and shall be used in determining the pass/fail condition of vehicle equipment.

Utah's Safety Inspection program meets the Federal Motor Carrier Safety Regulations as required in appendix G for yearly annual inspections. See Appendix G, Federal Motor Carrier Safety Regulations.

TABLE OF CONTENTS:

SECTION 1-REGISTRATION

The first step in the inspection of a vehicle is a review of the registration papers. Vehicles with out-of-state registration or vehicles with no registration can be inspected. These requirements apply to passenger cars, light trucks, motorcycles, heavy trucks, trailers, and buses.

A. AGREEMENT AMONG PAPERS

Check vehicle registration certificate, identification number on vehicle, license plates and vehicle description for agreement. Record the manufacturers VIN Plate Number on the safety inspection certificate.

ADVISE vehicle when:

Paperwork disagreements are accidental and clerical in nature.

REJECT vehicle when**:**

Registration certificate, identification number, license plate and vehicle description are not in agreement.

NOTE: Verification of VIN is required on all inspections.

B. PLATE MOUNTING

If the vehicle is registered, inspect the license plate(s) to see that they are securely mounted and are clearly visible.

ADVISE vehicle when:

Plates are not securely fastened, obscured or cannot be clearly identified.

(Utah Law requires two plates on most vehicles. Vehicles with Utah Apportioned plates are issued only one plate. Truck tractors should mount the Apportioned plate on the front. Trucks without trailers should mount the apportioned plate on the rear.)

ADVISE when:

a) Plates have tinted or colored covers.
b) License plates must be visible from 100 feet.
(41-1a-403 UCA and 41-1a-404 UCA)

SECTION 2-TIRES AND WHEELS

A. REAR WHEEL MUDGUARDS

Check vehicle for proper mudguard protection. Mudguards, flaps, or splash aprons shall: be at least as wide as the tires they are protecting, be directly in line with the tires, and have a ground clearance of not more than 50% of the diameter of a rear-axle wheel under any conditions of loading of the motor vehicle.

REJECT when vehicle:

a) Tire tread is not fully covered by body, trailer or fender.
b) Rear tires do not have the top 50% of the tire covered by mud flaps.
c) Rear mud flaps are not as wide as the tire.

NOTE: Wheel covers, mudguards, flaps or splash aprons are not required if the motor vehicle, trailer, or semi-trailer is designed and constructed so that it meets the above requirements. (41-6-150.10 U.C.A)

B. FRONT STEERING AXLE TIRES

1) Check tires with or without tread wear indicators.

REJECT vehicle when:

Tread is worn to less than 4/32 inch on steering axle tires when measured at any point on a major tread groove. (Do not measure on wear bar)

2) Check body ply and/or belt material.

REJECT vehicle when:

a) Tire has body ply or belt material exposed through the tread or sidewall.
b) Tire has any tread or sidewall separation.
c) Tire has a cut where the ply or belt material is exposed.
d) Tire is labeled “Not for Highway Use” or displaying other marking which would exclude use on a steering axle.
e) Tire is a tube-type radial tire without radial tube stem markings. These markings include a red band around the tube stem, the word “radial” embossed in metal stems, or the word “radial” molded in rubber stems.
f) There is mixing of bias and radial tires on the same axle.
g) Tire flap protrudes through valve slot in rim and touches stem.
h) There are re-grooved tires on the steering axles, except motor vehicles used solely in urban or suburban service. (See exception in 393.75(e). FMCSR)
i) Tire has a boot, blowout patch or other ply repair.

SECTION 2-TIRES AND WHEELS - (Continued)

B. FRONT STEERING AXLE TIRES-Continued

a) Weight carried exceeds tire load limit. This includes overloaded tire resulting from low air pressure.
b) Tire is flat or has noticeable (e.g., can be heard or felt) leak.
c) Any bus equipped with re-capped or re-treaded tire(s).
d) So mounted or inflated that it comes in contact with any part of the vehicle.

C. ALL OTHER TIRES

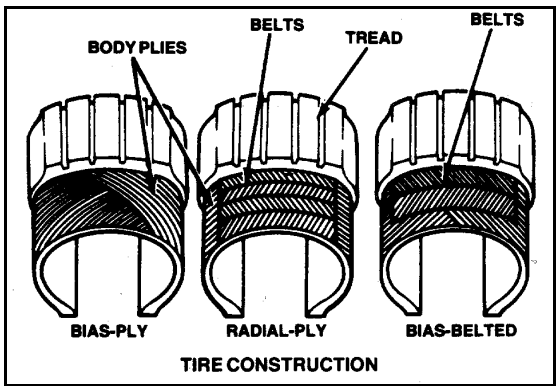
1) Check tires with or without tread wear indicators.

REJECT vehicle when:

Tread is worn to less than 2/32 inch when measured at any point on a major tread groove, excluding wear bars.

2) Check body ply and/or belt material.

Figure T-2



REJECT vehicle when:

a) Weight carried exceeds tire load limit. This includes overloaded tire resulting from low air pressure.
b) Tire is flat or has noticeable leak (e.g., can be heard or felt) leak.
c) Has body ply or belt material exposed through the tread or sidewall.
d) Has any tread or sidewall separation.
e) Has a cut where ply or belt material is exposed.
f) So mounted or inflated that it comes in contact with any part of the vehicle. (this includes a tire that contacts its mate.)
g) Is marked "Not for highway use" or otherwise marked and having a like meaning.

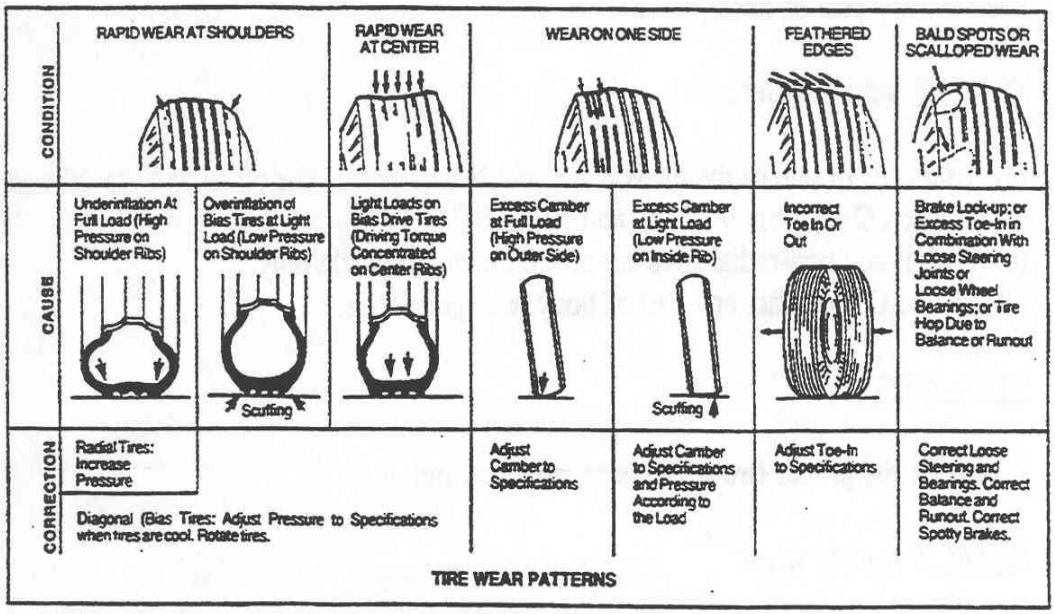


Figure T-3

D. DUAL TIRES

Check for mismatching of tire construction (i.e. radial and bias), sizes, inflation, and wear on any set of duals.

REJECT vehicle when:

a) Tire diameter is not within ¼ inch of the other and ½ inch on everything less than 9.00-20.
b) Duals are found in contact with any part of body or adjacent tire.

E. TIRE SIZE

Check for proper tire width, size and load rating.

REJECT vehicle when:

a) Tire width is beyond outside of vehicle body.
b) Tire is not proper size and load rating per axle as determined by OEM specifications.

SECTION 2-TIRES AND WHEELS - (Continued)

F. VALVE STEMS

Check valve stems for damage or cracks.

REJECT vehicle when**:**

Valve stem is cracked, damaged or shows evidence of wear because of misalignment.

G. RIMS, RINGS, NUTS, CLAMPS, STUDS

Check rims.

REJECT vehicle when**:**

a) Rims and rings are mismatched.
b) Rings show evidence of slippage, rust, or damage.
c) Rims or rings are bent, sprung, cracked or otherwise damaged.
d) Clamps, nuts and studs are loose, damaged or missing.
e) There is slippage on Louisville/Dayton or Dayton type wheels.
f) Wheel nuts have improper thread engagement.
g) Wheel nuts, studs, or clamps are broken, missing or mismatched.
h) Wheel rings, disc, spoke or rim type wheels show any evidence of having been repaired or re-welded.
i) Stud holes are out-of-round.
j) There are cracks between the hand holes or the stud holes in the disc.
k) Wheel casting is cracked or there is evidence of wear in the clamping area.

SECTION 3-STEERING ALIGNMENT AND SUSPENSION

The energy absorbing steering column may be used on light vehicles, but seldom if ever, on medium and heavy vehicles. If present, it should be inspected in the same manner as on a passenger car.

A. STEERING WHEEL LASH (Free Play)

Check steering wheel for excessive play.

STEERING WHEEL FREE PLAY SHALL NOT EXCEED THE FOLLOWING CRITERA:

REJECT vehicle when:

Steering wheel lash is beyond specifications shown on chart below.

Steering Wheel Diameter	Manual Steering	Power Steering
16”……	2” ……	4 ½”
18”……..…	2 ¼” …….	4 ¾”
20”…….	2 ½”……..	5 ¼”
22”…….	2 ¾”……..	5 ¾”

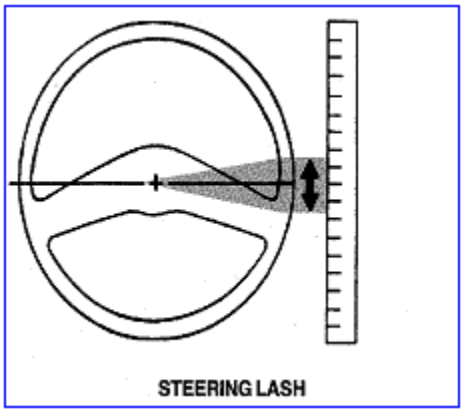


Figure T-4

Excessive steering play may be determined as shown in this table. (Vehicles with power steering must be checked with engine running).

SECTION 3-STEERING ALIGNMENT AND SUSPENSION – (Continued)

B. STEERING COLUMN

1) Check steering column for proper functioning. Check flexible coupling in steering column (if the vehicle is so equipped) for misalignment and tightness of adjusting screw or nut.

2) Check for absence or looseness of U-bolt(s) or positioning parts.

3) Check for worn, faulty or welded repairs of universal joint(s).

4) Steering wheel not properly secured.

REJECT vehicle when:

a) Flexible coupling is badly mis-aligned.
b) Clamp bolt (nut) is loose or missing.
c) There is separation of the shear capsule from bracket and general "looseness" of wheel and column, or if wheel and column can be moved as a unit.
d) Adjustable steering wheel or tilt steering cannot be secured in a safe operating position, or if there is 3/4 inches or more of movement at the center of the steering column when locked in operating position.
e) There is any absence or looseness of U-bolt(s) or positioning part(s).
g) There is worn, faulty or welded repairs to universal joint(s).
h) Steering wheel not properly secured.
i) Steering wheel has cracks.
j) There are missing positioning parts.

C. FRONT AXLE BEAM

Check front axle beam for defects, obvious crack(s) and obvious welded repair(s).

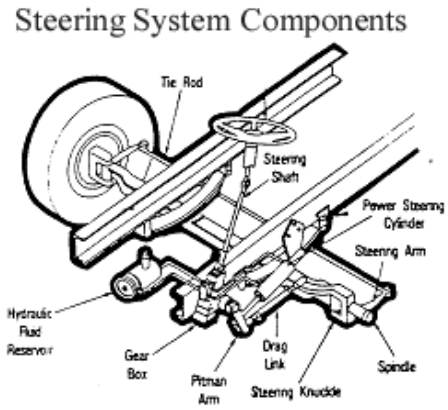
REJECT vehicle when:

a) Kingpins are worn and show excessive movement.
b) There are cracks.
c) There are welds.
d) There are bends,
e) Positioning parts are loose. (U-bolts, spring hangers, etc.)

SECTION 3-STEERING ALIGNMENT AND SUSPENSION – (Continued)

D. STEERING GEAR BOX

Check steering gear box for proper functioning, including loose or missing mounting bolt(s), any cracks in gearbox or mounting brackets.



REJECT vehicle when:

a) There are loose or missing bolt(s) at frame or mounting brackets.
b) There are crack(s) in the gear box or mounting brackets.
c) Fasteners are missing.

E. PITMAN ARM

Check pitman arm.

REJECT vehicle when:

There is any looseness of the pitman arm on the steering gear output shaft.

F. POWER STEERING

1) Check the auxiliary power assist cylinder for looseness.
2) Check power steering belts for proper condition and tension.
3) Inspect power steering system including gear, hoses, hose connections, cylinders, valves, pump and pump mounting for condition, rubbing and leaks.
4) Inspect power steering reservoir for fluid level below OEM specifications.

REJECT vehicle when:

a) Auxiliary power assist cylinder is loose.
b) Belts are frayed or cracked and tension is not maintained.
c) Hoses or hose connections have been rubbed by moving parts or are leaking.
d) Cylinders, valves or pump show evidence of leakage.
e) Pump mounting parts are loose or broken.
f) Power steering system is inoperative.
g) Power steering fluid level is below OEM specifications.

SECTION 3-STEERING ALIGNMENT AND SUSPENSION – (Continued)

G. BALL AND SOCKET JOINTS

Unload the ball joint by raising the vehicle depending on the construction of the suspension system. Grasp the tire and wheel assembly at the top and bottom, move in and out to detect looseness. (More horizontal) movement is allowable because of the nature of most ball joint construction.

NOTE: In checking for vertical motion of ball joints, keep in mind that the load-carrying joint must be unloaded, and that a pry bar pressure sufficiently only to lift the weight of the wheel assembly is required.

Check for any movement under the steering load of a stud nut.

Check for any motion, other than rotational, between any linkage member and its attachment point of more than 1/4 inch.

REJECT vehicle when:

a) There is any movement under steering load of a stud nut.
b) There is any motion, other than rotational, between any linkage member and its attachment point of more than 1/4 inch.

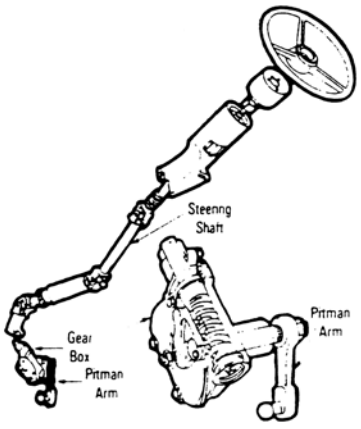
H. TIE RODS AND DRAG LINKS

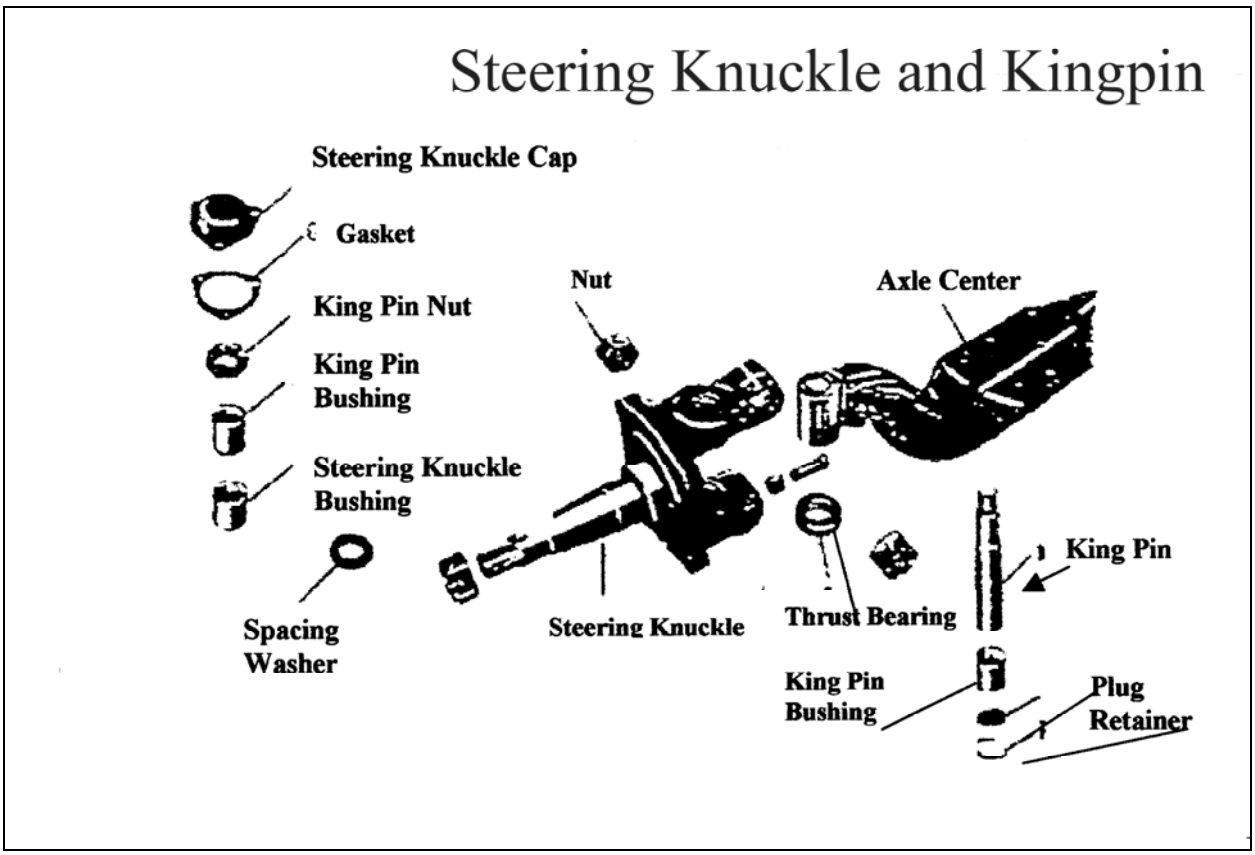
1) Check tie rods and drag links for loose clamp(s) or clamp bolt(s).
2) Check for loose or missing nuts on tie rods, pitman arm, drag link, steering arm or tie rod arm.

REJECT vehicle when:

a) There are loose or missing clamp(s) or bolt(s).
b) There are worn tie rod ends.
c) There are loose or missing nuts on tie rods, pitman arm, drag link, steering arm or tie rod arm.
d) Any looseness is detected in any threaded joint.

Steering Gear and Pittman Arm




Steering Knuckle and Kingpin
Steering Knuckle Cap
Gasket
King Pin Nut
King Pin Bushing
Steering Knuckle Bushing
Spacing Washer
Nut
Steering Knuckle
Axle Center
Thrust Bearing
King Pin
King Pin Bushing
Plug Retainer

SECTION 3-STEERING ALIGNMENT AND SUSPENSION – (Continued)

I. STEERING SYSTEM

Check for any modifications or other condition that may interfere with free movement of any steering component.

REJECT vehicle when:

Any modification or other condition that interferes with free movement of any steering component is detected.

J. STEERING LINKAGE, KINGPIN, SPRINGS

LINKAGE PLAY – Too much free play causes wheel shimmy, erratic brake action and steering control problems. Make sure any looseness detected is not wheel bearing free play, by applying service brakes during the inspection.

Trucks with "I" beam, twin "I" beam, or tube type front axle – Hoist truck under axle, grasp front and rear of tire and attempt to shake assembly right and left to determine linkage looseness. Then grasp top and bottom of tire and attempt to rock in and out to determine kingpin looseness. Record movement at front and rear edge – top and bottom edge of tire. A bar for leverage may be used for heavy wheels. If the inspector uses the "leverage" of a pry bar to exert pressure, he can easily "force" an apparent ball joint movement and get a false reading. [See page 11 - Figure T-4].

K. LEAF SPRING SUSPENSIONS

NOTE: After a turn, lateral axle displacement is normal with some suspensions. Forward or rearward operation in a straight line will cause the axle to return to alignment).

1) Check for cracked, broken, loose, missing or sagging suspension springs. Inspect spring shackles, spring center bolts, U-bolts, clips and other attaching parts.

2) Check for any U-bolt(s), spring hanger(s), or other axle positioning part(s) that are cracked, broken, loose or missing resulting in shifting of an axle from its normal position.

REJECT vehicle when**:**

a) Springs are cracked, broken, loose, missing, separated or sagging.
b) Spring attaching parts are cracked, broken, loosely connected, missing, worn, or sagging.
c) Improper spring size and rating are utilized that do not meet or exceed OEM specifications.
d) U-bolt(s), spring hanger(s), or other axle positioning part(s) are cracked, broken, loose or missing resulting in shifting of an axle from its normal position.

SECTION 3-STEERING ALIGNMENT AND SUSPENSION – (Continued)

L. ALL OTHER SUSPENSIONS

1) Check shock absorbers.
2) Check for broken coil springs and missing rubber springs.
3) Check for broken torsion bar spring in a torsion bar suspension.
4) Check for deflated air suspension, i.e., system failure, leaks.

REJECT vehicle when:

a) Rubber bushings are destroyed or missing.
b) Mountings are loose, broken or missing.
c) Shock absorbers are missing or disconnected.
d) Shock absorbers are leaking.
e) Coil springs are broken and rubber springs are missing.
f) Torsion bar spring is broken.
g) Air suspension is deflated, there is a system failure or leaks, breaks, cracks, misalignment, components that are the improper size, the ratings do not match.

M. TORQUE, RADIUS OR TRACKING COMPONENTS

Check all torque, radius and tracking components for proper operations.

REJECT vehicle when:

Any part of a torque, radius or tracking component assembly or any part used for attaching the same to the vehicle frame or axle is cracked, loose, broken or missing. (Does not apply to loose bushings in torque or track rods.)

N. WHEEL TRACKING

Check wheel tracking using the following:

With the front wheels in a straight-ahead position, measure the distance between the center of the front wheels to the center of the rear wheels. Compare the dimensions on the right side against the dimensions on the left.

REJECT vehicle when:

a) The dimensions between wheel centers on one side differ from the dimensions on the other side by more than (1) one inch.
b) The rear axle is misaligned.

SECTION 4-COUPLING DEVICES

A. FIFTH WHEEL

1) Check the mounting to frame.

REJECT vehicle when:

a) Any fasteners are missing or ineffective.
b) Any movement between mounting components.
c) Any mounting angle iron is cracked or broken.

2) Check mounting plates and pivot brackets.

REJECT vehicle when:

a) Any fasteners are missing or ineffective.
b) Any welds or parent metal cracked.
c) More than 3/8 inch horizontal movement between pivot bracket pin and bracket exists.

3) Sliders.

REJECT vehicle when:

a) Any latching fasteners are missing or ineffective.
b) Any fore or aft stops are missing or are not securely attached.
c) Movement more than 3/8 inch between slider bracket and slider base exist.
d) Any slider component is cracked in parent metal or weld.

4) Lower coupler.

REJECT vehicle when:

a) Horizontal movement between the upper and lower fifth wheel halves exceeds 1/2 inch.
b) Operating handle not in closed or locked position.
c) Kingpin not properly engaged.
d) Separation between upper and lower coupler allows light to show through from side to side.
e) Cracks in the fifth wheel plate: Exceptions – Cracks in the fifth wheel approach ramps and casting shrinkage cracks in the ribs of the body of a cast fifth wheel are allowed.
f) Locking mechanism parts are missing, broken or deformed to the extent the kingpin is not securely held.

SECTION 4-COUPLING DEVICES – (Continued)

B. PINTLE HOOKS

1) Mounting to frame.

REJECT vehicle when:

a) There are any missing or ineffective fasteners (a fastener is not considered missing if there is an empty hole in the device but no corresponding hole in the frame or vise versa).
b) Mounting surface cracks extend from point of attachment (e.g., cracks in the frame at mounting bolt holes.)
c) Pintle hook is loosely mounted.
d) Frame crossmember providing pintle hook attachment is cracked.

2) Integrity.

REJECT vehicle when:

a) Cracks are discovered anywhere in pintle hook assembly.
b) Any part of the horn section has been reduced by more than 20%.

C. DRAWBAR/TOWBAR EYE

1) Check the drawbar/towbar eye for proper mounting.

REJECT vehicle when:

a) Any cracks in attachment welds are discovered.
b) Any missing or ineffective fasteners are discovered.

2) Integrity.

REJECT vehicle when:

a) Any cracks are discovered.
b) Any part of the eye is reduced by more than 20%.

SECTION 4-COUPLING DEVICES – (Continued)

D. DRAWBAR / TOW-BAR TONGUE

1) Slider (power or manual).

   Check drawbar / tow-bar tongue for proper operation.

   REJECT vehicle when:

   a) Latching mechanism are ineffective or disconnected.
   b) Stops are missing or ineffective.
   c) There is movement of more than 1\4 inch between slider and housing.
   d) Any leaking, air, hydraulic cylinders, hoses, or chambers are discovered (other than slight oil weeping normal with hydraulic seals).

2) Integrity

   Check for cracks and movement of 1/4 inch between slider and housing.

   REJECT vehicle when:

   a) Any cracks are discovered.
   b) There is movement of 1/4 inch or more between sub-frame and drawbar at point of attachment.

E. SAFETY DEVICES

1) Check for missing safety devices, chains, metal wire rope, etc.
2) Check for safety devices that are unattached or incapable of secure attachment.
3) Check for worn chains and hooks.
4) Check for kinked or broken cable strands and improper clamps or clamping.

   REJECT vehicle when:

   a) Safety devices are missing.
   b) Safety devices are unattached
   c) Safety devices are incapable of secure attachment.
   d) Chains and hooks are worn to the extent of a measurable reduction in link cross section.
   e) Improper repairs are evident including welding, wire, small bolts, rope and tape.
   f) Cable has kinked or broken cable strands.
   g) Cable has improper clamps or clamping.

SECTION 4-COUPLING DEVICES – (Continued)

F. SADDLE MOUNTS

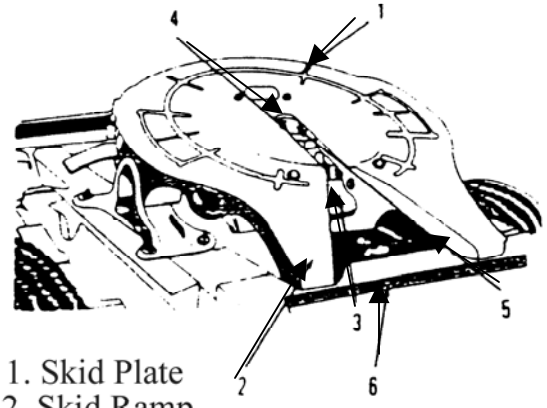
Check saddle mounts for proper attachment.

REJECT vehicle when:

a) Any required device is missing or has ineffective fasteners.
b) It is incapable of secure attachment.
c) Saddle mount has any loose mountings.
d) Any cracks or breaks in a stress or load bearing member are discovered.
a) Horizontal movement between upper and lower saddle-mount halves exceeds 1/4 inch.

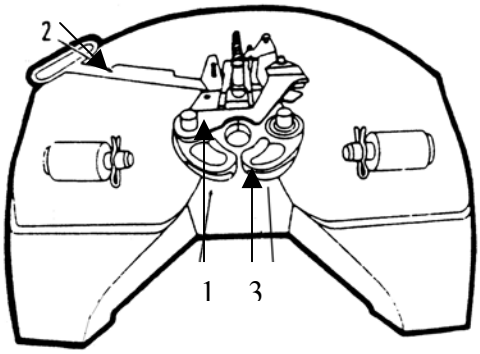
G. FIFTH WHEEL DIAGRAMS

Fifth Wheel Parts



1. Skid Plate
2. Skid Ramp
3. Throat
4. Coupler Jaws
5. Locking Mechanism
6. Skid Ramp Stop

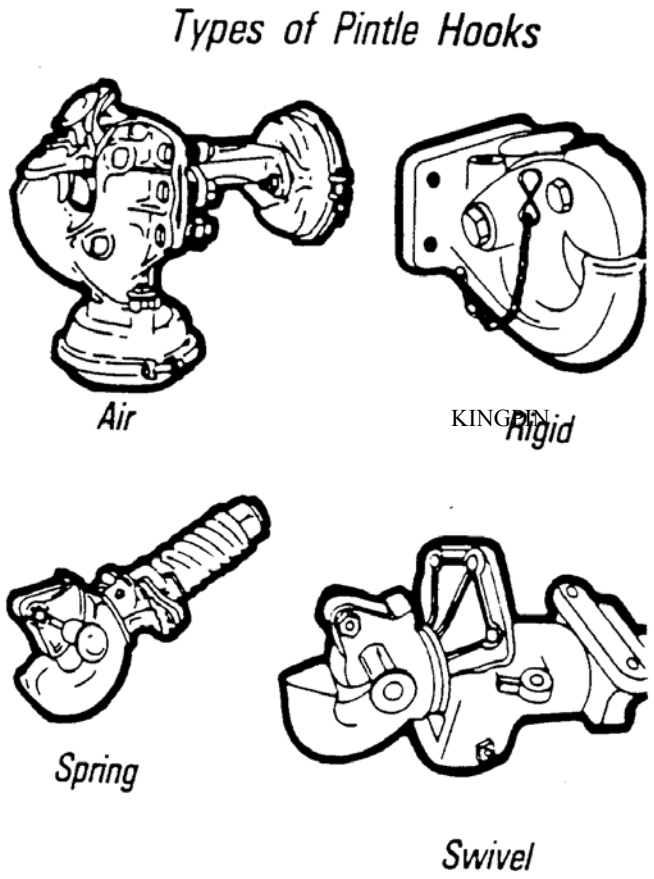
Fifth Wheel Components



1. Coupler Arm
2. Release Handle
3. Locking Jaws

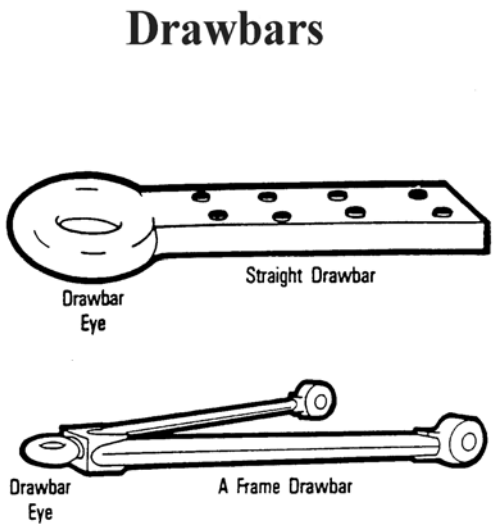
SECTION 4 – COUPLING DEVICES – (Continued)

H. PINTLE HOOKS DIAGRAM

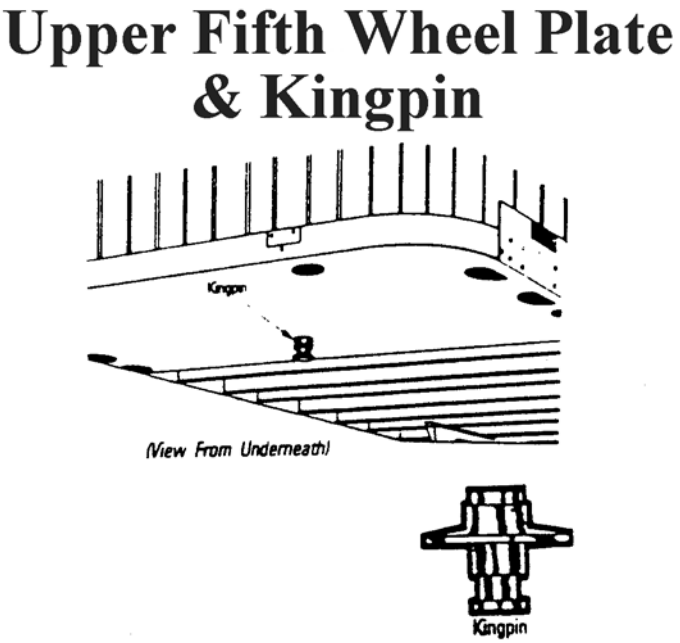


SECTION 4 – COUPLING DEVICES – (Continued)

I. DRAWBAR DIAGRAMS

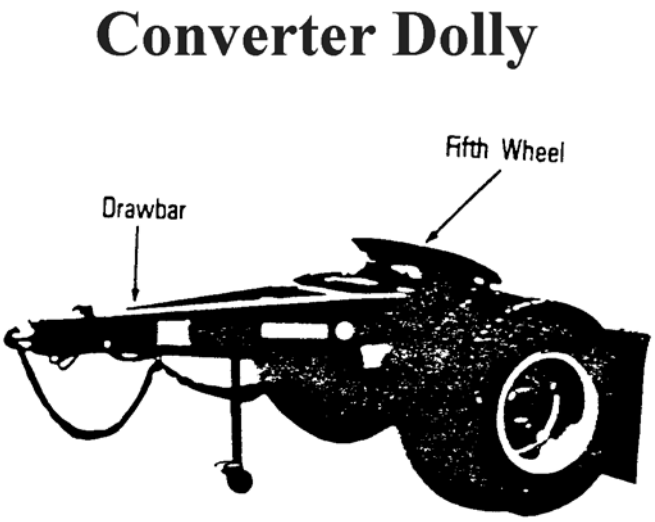


J. UPPER FIFTH WHEEL PLATE AND KINGPIN DIAGRAM



SECTION 4 – COUPLING DEVICES – (Continued)

K. CONVERTER DOLLY DIAGRAM



SECTION 5 – BRAKES

Only qualified personnel with proper equipment should inspect brakes on all trucks and buses. One wheel per axle must be checked. When repairs are warranted, replacement parts must meet or exceed OEM specifications.

> ***NOTE*: *Heavy duty trucks and buses are not required to have wheels pulled if the vehicle is equipped with inspection plates (adjustment slots are not inspection plates) or if the vehicle has open brake drums or if the vehicle is tested by a plate brake tester. Any truck or truck tractor manufactured after July 24, 1980 must have brakes on the front wheels.***

Every trailer or semi-trailer operated upon a highway with a gross weight of less than 2,000 pounds need not be equipped with brakes.

Trailers with a gross weight of 2,000 pounds or more, shall be equipped with brakes adequate to control the movement of, and to stop and hold such vehicle, and so designed to be activated by the driver of the towing vehicle.

Any full trailer, semi-trailer, or any pole trailer having a gross vehicle weight rating (GVWR) of 3,000 pounds or more, must have brakes operating on all wheels. This requirement is found in the Federal Motor Carrier Safety Regulations (FMCSR) Part 393.42.

Break-away brakes shall be required on trailers with a gross weight of 3,000 pounds or more.

When measuring the amount of brake push rod travel allowed, it is important to reference the accompanying charts located in this Safety Inspection Manual. The type and size of a brake chamber determines the allowable push rod specification. Larger brake chambers will result in more allowable push rod travel.

Often, the type of brake chamber is marked on the chamber itself, usually on the band (clamp) around its circumference. If no marking is discovered, you must measure the diameter of the chamber (at the band "clamp") itself. The resulting measurement, when referenced in the contained chart, will indicate the brake can type and the maximum push rod stroke.

All vehicles manufactured or equipped with air brakes, regardless of weight, must be inspected by inspectors certified in heavy truck and bus inspections.

SECTION 5-BRAKES-(Continued)

A. CHECK BRAKE SYSTEM ON ALL VEHICLES

Check Service Brakes for operation or missing when required. Check for broken, missing or loose components, brake lining, air leaks in brake chambers, brake readjustment limits, mismatch across steering axle of air chamber sizes and slack adjuster length.

NOTE: ***For Wedge Brakes – Movement on the scribe mark on the lining shall not exceed 1/16 inch.***

REJECT vehicle when:

a) There is absence of any braking action on any axle required to have brakes upon application of the service brakes (such as missing brakes or brake shoe(s), failing to move upon application of a wedge, S-cam, cam or disc brake).
b) There are missing or broken mechanical components including: shoes, linings, pads, springs, anchor pins, spiders, cam rollers, push-rods and air chamber mounting bolts.
c) Brake linings are contaminated with oil, grease, or brake fluid.
d) Brake linings or pads are not firmly attached to the shoe.
e) There are loose brake components including air chambers, spiders, and cam shaft support brackets.
f) There are audible air leaks at brake chamber (Example – ruptured diaphragm, loose chamber clamp, etc.).
g) Brakes are beyond re-adjustment limits (See diagram page 33) Stroke shall be measured with engine off and reservoir pressure of 80 to 90 PSI with brakes fully applied. **Brake chambers utilizing long stroke push rods are allowed a greater maximum stroke at which brakes should be readjusted. (See attached charts for exact readjustment limits).**
h) On non-steering axles: Brake lining has a thickness less than ¼ inch at the shoe center for air drum brakes, 1/16 inch or less at the shoe center for hydraulic and electric brake drum brakes, and less than 1/8 inch for air disc brakes.
i) Steering axles: Brake lining has a thickness less than ¼ inch at the shoe center for drum brakes, less than 1/8 inch for air disc brakes and 1/16 inch or less for hydraulic and electric brakes.

SECTION 5-BRAKES-(Continued)

B.PARKING BRAKE SYSTEM

Check parking brake system.

REJECT vehicle when:

No brakes on the vehicle or combination are applied upon actuation of the parking brake control, including driveline hand controlled parking brakes.

C. BRAKE DRUM AND ROTORS

1) Check brake drums, by measuring the thickness.
2) Check brake rotors. Inspect for mechanical damage. Measure thickness of disc.

REJECT vehicle when:

a) Brake drum has external crack or cracks that open upon brake application. (Do not confuse short hairline heat check cracks with flexural crack(s).
b) Any portion of the brake drum or rotor is missing or in danger of falling away.
c) There are fluids contaminating the friction surface of either brake drum or rotor.
d) The inside diameter of drum measures more than throwaway diameter stamped on the drum. For unmarked drums refer to OEM specifications.
e) Thickness of disc is less than the minimum thickness stamped on the disc.

D. BRAKE HOSES

Check brake hose(s) for any damage, for bulges or swelling, audible leaks, proper fittings and to determine if hose is cracked, broken or crimped.

REJECT vehicle when:

a) Brake hose(s) have any damage extending through the outer reinforcement ply. (Rubber impregnated fabric cover is not reinforcement ply.) (Thermoplastic nylon may have braid reinforcement or color difference between cover and inner tube). Exposure of second color is cause for rejection.
b) Bulge(s) or swelling is evident when air pressure is applied.
c) Any audible air leaks are discovered.
a) Two brake hoses are improperly joined (such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube.) A correct new pressure fitting is allowed.
e) Air hoses are cracked, broken or crimped.

SECTION 5-BRAKES-(Continued)

E. BRAKE TUBING

Check brake tubing for any damage, for leaks and general condition.

REJECT vehicle when:

a) Any audible air leaks are present.
b) Brake tubing is cracked, damaged by heat, broken or crimped.

F. LOW PRESSURE WARNING DEVICE

Check Low Pressure Warning Device

REJECT vehicle when:

Device is missing, inoperative, or does not operate at 55 psi and below ½ the governor cut-out pressure, whichever is less.

G. TRACTOR PROTECTION VALVE (DEVICE)

Check Tractor Protection Valve (device) on Power Unit.

REJECT vehicle when:

The Tractor Protection Valve is inoperative or missing.

H. AIR BRAKES/COMPRESSOR – LOW INDICATOR - GOVERNOR

Check for proper operation and condition.

REJECT vehicle when:

a) Time required to build pressure from 5-90 PSI at fast idle is more than five (5) minutes.
b) Governor cut-out pressure is higher than 135 psi.
c) Governor cut-in pressure is lower than 90 psi.
d) Compressor drive belts are in a condition of impending or probable failure.
e) Compressor mounting bolts are loose.
f) Pulley is cracked, broken, or loose.
g) Mounting brackets, braces, and adapters are loose, broken or missing.

SECTION 5-BRAKES-(Continued)

I. ELECTRIC BRAKES AND BREAKAWAY BRAKING DEVICE

Check electric brakes and breakaway braking device.

REJECT vehicle when:

a) There is absence of braking action on any wheel required to have brakes.
b) Breakaway braking device is missing or inoperable.

J. HYDRAULIC BRAKES. (Including Power Assist Over Hydraulic ,Engine Drive Hydraulic Booster & Dual Hydraulic Circuits)

Check hydraulic brakes, including Power Assists & Dual Hydraulic Circuits for proper operation.

REJECT vehicle when:

a) Master cylinder is less than ¾ full.
b) There is no pedal reserve when engine is running except by pumping pedal.
c) Power assist unit fails to operate.
d) Brake hoses are seeping or swelling under application of pressure.
e) Check valve is missing or inoperative.
f) Hydraulic fluid is observed leaking from the brake system.
g) Hydraulic hoses are abraded (chaffed) through outer cover-to fabric layer.
h) Fluid lines (hoses or tubes) or connections are leaking, restricted, crimped, cracked or broken.
i) Brake failure or low fluid warning light is on and/or inoperative.
j) Less than 1/5 of the total available foot pedal travel remains.
k) Master cylinder is improperly mounted.
l) Dual hydraulic circuit light is burned out, or remains on when brake pedal is depressed.
m) Dual hydraulic fluid level is more than ¾ inch below top of reservoir.

SECTION 5-BRAKES-(Continued)

K. VACUUM BRAKING SYSTEMS

Check Vacuum Braking System for proper operation.

REJECT vehicle when:

a) There is insufficient vacuum reserve to permit one full brake application after engine is shut off.
b) Vacuum hose(s) or line(s) are leaking, restricted, abraded (chafed) through outer cover to cord ply, crimped, cracked, broken or has collapse of vacuum hose(s) when vacuum is applied.
c) Low-vacuum warning device is missing or inoperative.

L. WHEEL SEALS

Check for leaking wheel seals.

REJECT vehicle when:

Wheel seals are leaking.

BRAKE CHAMBER SIZE CHARTS

BOLT TYPE (Dimension in Inches)

Type	Effective Area (Square Inches)	Outside Diameter	Maximum stroke at which brakes should be readjusted
A	12	6 15/16	1 3/8
B	24	9 3/16	1 1/2
C	16	8 1/6	1 3/4
D	6	5 1/4	1 1/4
E	9	6 3/16	1 3/8
F	36	11	2 1/4
G	30	9 7/8	2

SECTION 5-BRAKES-(Continued)

BRAKE CHAMBER SIZE CHARTS (Continued)

ROTOCHAMBER TYPE-(Diameter in Inches)

Type	Effective Area (Square Inches)	Outside Diameter	Maximum stroke at which Brakes should be readjusted
9	9	4 9/32	1 1/2
12	12	4 13/16	1 1/2
16	16	5/ 13/32	1 7/8
20	20	5 15/16	1 7/8
24	24	6 13/32	1 7/8
30	30	7 1/16	2 1/4
36	36	7 5/8	2 5/8
50	50	8 7/8	3

CLAMP TYPE-(Diameter in Inches)

Type	Effective Area (Square Inches)	Outside Diameter	Maximum stroke at which brakes should be readjusted
6	6	4 1/2	1 1/4
9	9	5 1/4	1 3/8
12	12	5 11/16	1 3/8
16	16	6 3/8	1 3/4
20	20	6 25/32	1 3/4
24	24	7 7/32	1 3/4
30	30	8 3/32	2
36	36	9	2 1/4

LONG STROKE CLAMP TYPE BRAKE CHAMBER DATA-(Diameter in Inches)

Type	Outside Diameter	Brake Adjustment Limit
12	5-11 / 16 (14.5 mm)	1 - 3 / 4 (4.5 cm)
16	6 3 / 8 (162 mm)	2.0 (51 mm)
20	6 – 25 / 32 (72 mm)	2.0 (51 mm)
24	7 – 7 / 32 (184 mm)	2.0 (51 mm)
24*	7 – 7 / 32 (184 mm)	2.5 (64 mm)
30	8 – 3 / 32 (206 mm)	(64 mm)

SECTION 5-BRAKES-(Continued)

BRAKE LINING THICKNESS CHART

1) STEERING AXLES

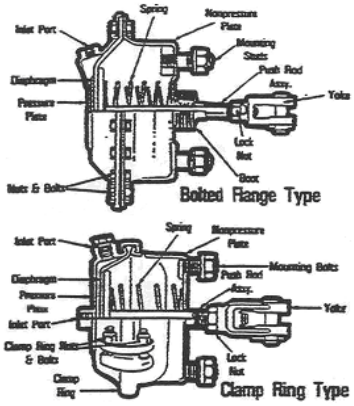
VEHICLE FAILS IF:	
DRUM BRAKES (ALL DRUM BRAKES)	LESS THAN 1/4 INCH
AIR DISC BRAKES	LESS THAN 1/8 INCH
HYDRAULIC DISC	AT 1/16 INCH OR LESS
ELECTRIC BRAKES	AT 1/16 INCH OR LESS

2) NON STEERING AXLES

VEHICLE FAIL IF:	
AIR DRUM BRAKES	LESS THAN 1/4 INCH
AIR DISC BRAKES	LESS THAN 1/8 INCH
HYDRAULIC DRUM	AT 1/16 INCH OR LESS
ELECTRIC DRUM	AT 1/16 INCH OR LESS

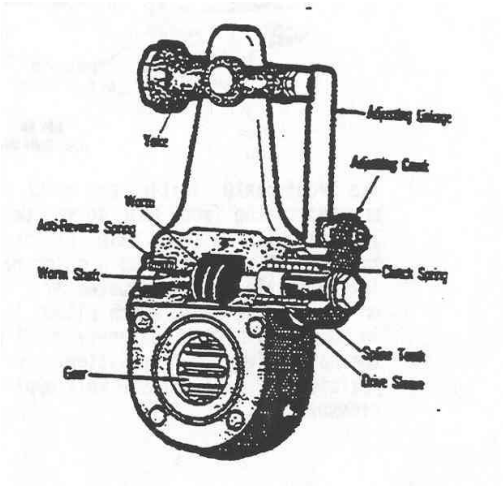
SECTION 5-BRAKES-(Continued)

BRAKE CHAMBERS

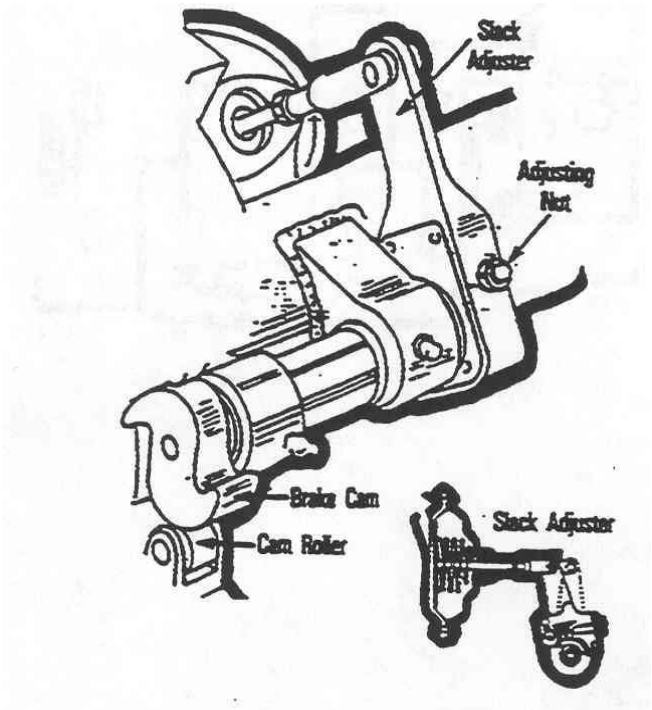


BRAKE CHAMBERS CONVERT THE ENERGY OF AIR PRESSURE INTO MECHANICAL FORCE AND MOTION, WHICH ACTIVATES THE FOUNDATION BRAKE MECHANISM.

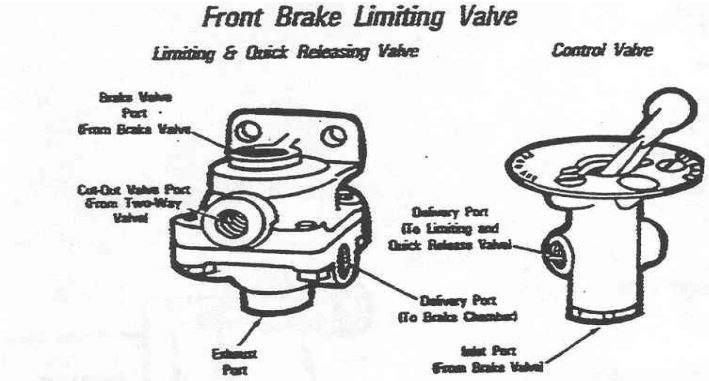
AUTOMATIC SLACK ADJUSTER



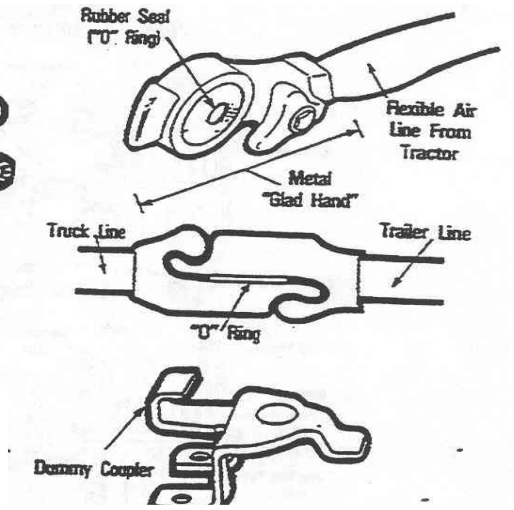
AUTOMATIC SLACK ADJUSTERS PERFORM THE SAME FUNCTION AS THE STANDARD UNIT, EXCEPT THAT IT AUTOMATICALLY ADJUST FOR LINING WEAR.



THE SLACK ADJUSTER IS THE LINK BETWEEN THE ACUATOR (BRAKE CHAMBER) AND THE FOUNDATION BRAKE CAMSHAFT. IT TRANSFORMS AND MULTIPLIES THE FORCES DEVELOPED BY THE BRAKE CHAMBER INTO A TORQUE WHICH APPLIES THE BRAKES VIA THE BRAKE CAMSHAFT. SLACK ADJUSTERS ARE EQUIPPED WITH AN ADJUSTING MECHANISM, PROVIDING A MEANS OF ADJUSTMENT TO WHERE THE ANGLE IS LESS THAN 90 DEGREES, THE BRAKE FORCE DIMINISHES AND THE PUSH ROD MAY BOTTOM OUT.

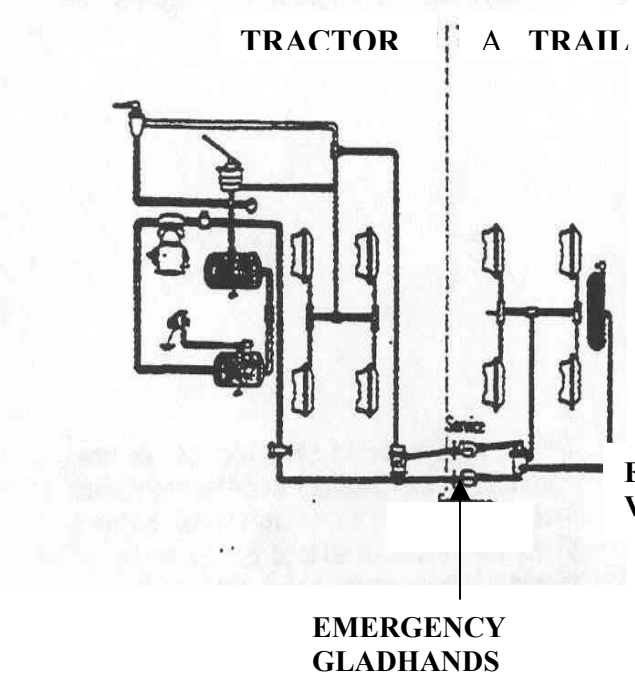


THE FRONT BRAKE LIMITING AND QUICK RELEASE VALVE, MOUNTED ON THE FRONT AXLE SERVES TWO FUNCTIONS. THE VALVE LIMITS FRONT AXLE SERVICE BRAKE APPLICATION BY 50% AND SERVES AS A QUICK RELEASE VALVE FOR THAT AXLE. IT IS ACTUATED BY A CONTROL VALVE ON THE VEHICLE DASH, WHICH ALLOWS IT TO BE PLACED IN THE 50% LIMITING (SLIPPERY ROAD) POSITION OR IN THE NORMAL, (DRY ROAD) POSITION. IN THE NORMAL POSITION, IT WILL DELIVER FULL APPLICATION PRESSURE

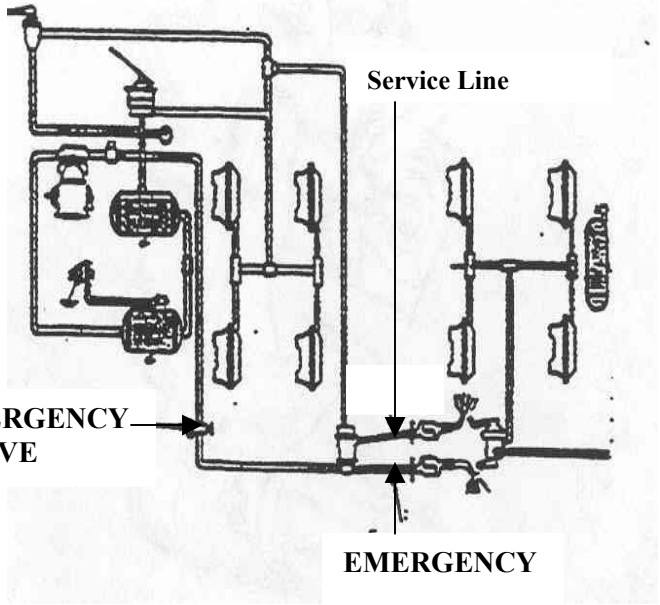


COUPLINGS USED ON SERVICE AND EMERGENCY LINES BETWEEN TRACTORS AND TRAILERS ARE DESIGNED SO THAT WHEN TWO ARE CONNECTED TOGETHER, RUBBER GASKETS ARE PRESSED FIRMLY TOGETHER TO MAKE AN AIRTIGHT SEAL.

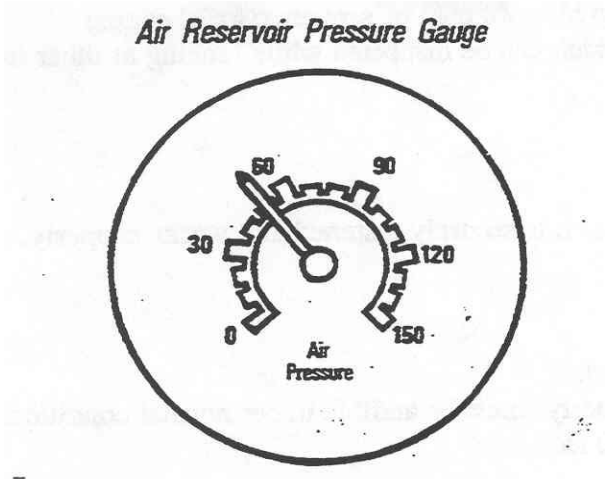
SERVICE AND EMERGENCY AIR LINES



TRAILER BREAKAWAY

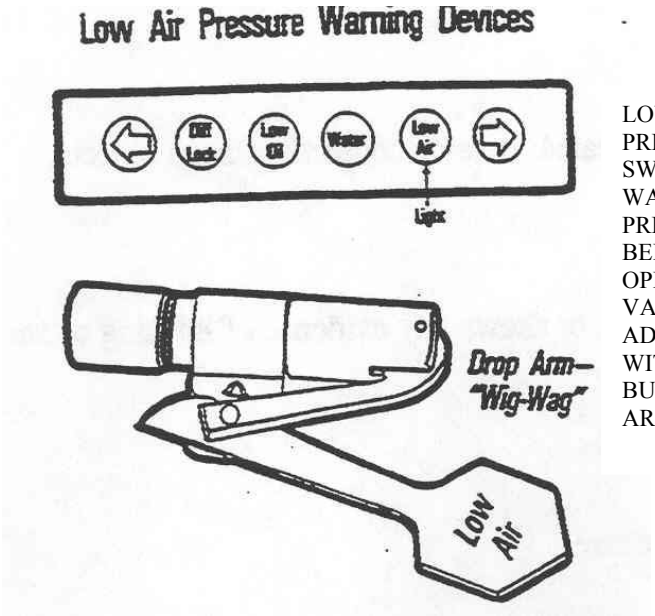


SECTION 5-BRAKES-(Continued)

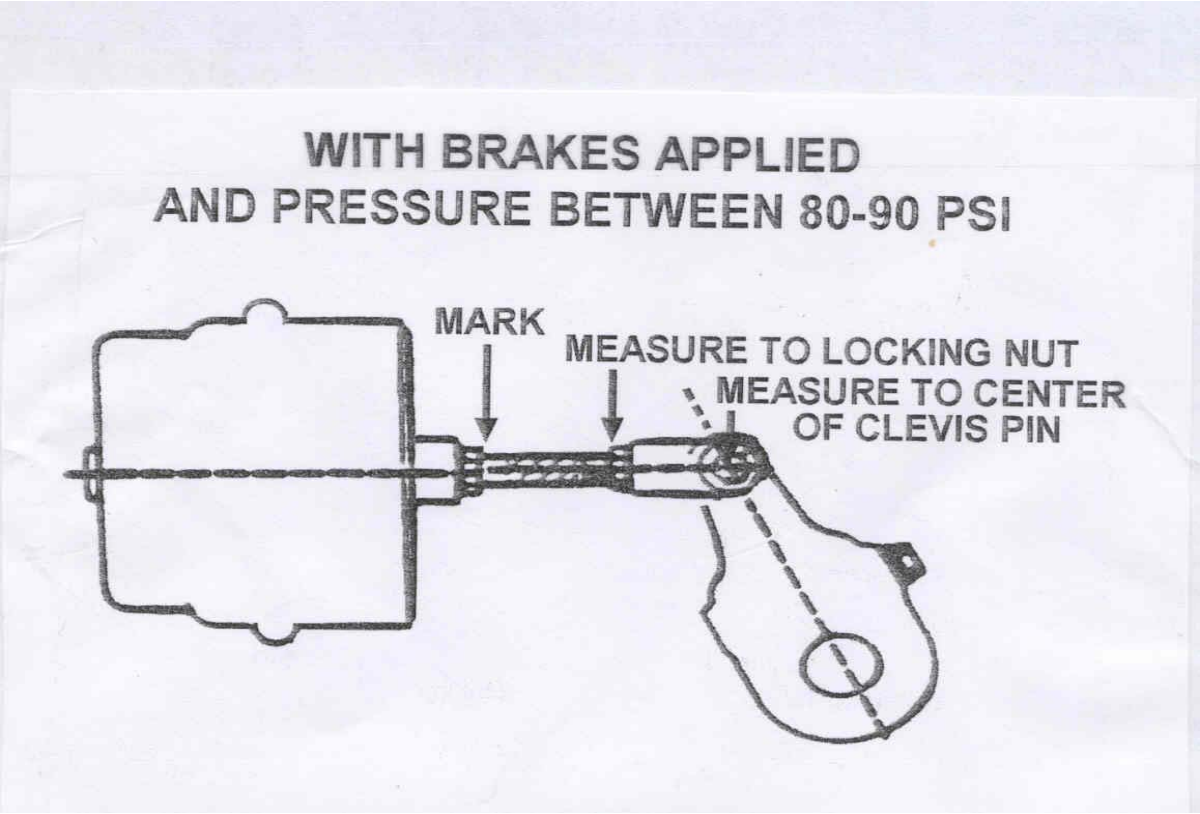


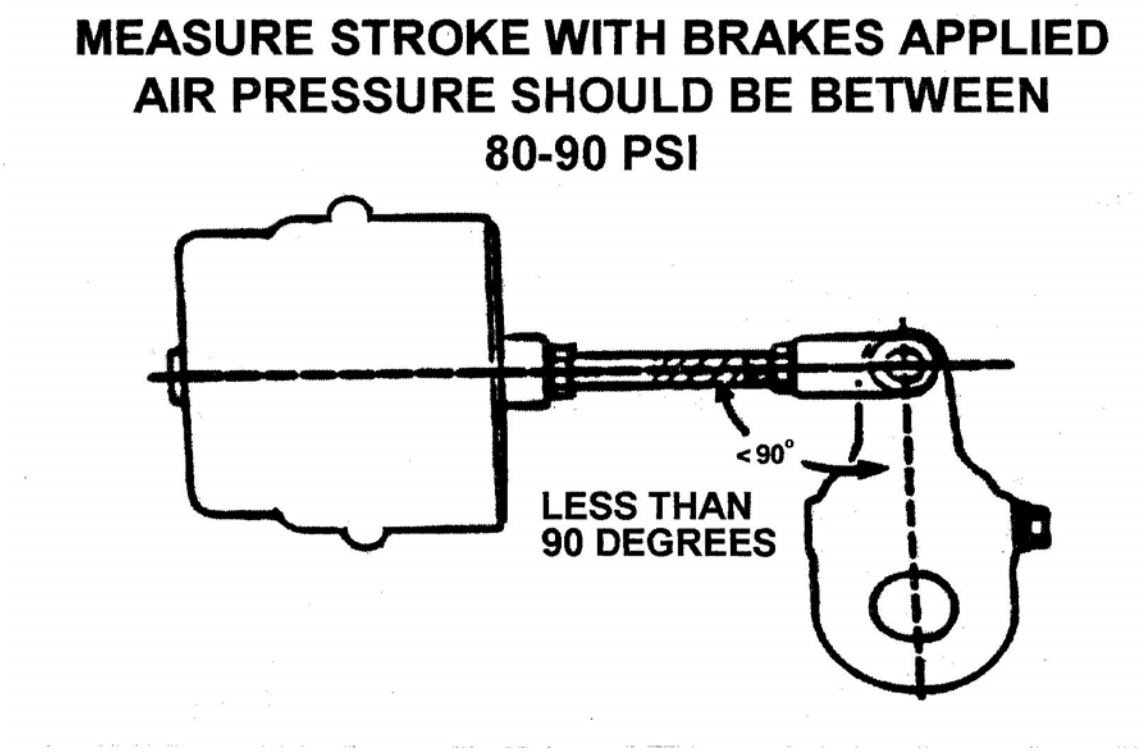
THE AIR RESERVOIR PRESSURE GAUGE INDICATES THE AVAILABLE AIR PRESSURE IN BOTH THE TRACTOR AND TRAILER RESERVOIRS. ON A DUAL CIRCUIT SYSTEM THE GAUGE CONTAINS TWO POINTERS NORMALLY OF CONTRASTING COLORS. ONE POINTER REGISTERS AIR PRESSURE IN ON SYSTEM, AND THE OTHER POINTER REGISTERS PRESSURE IN THE OTHER SYSTEM. SOME DUAL SYSTEM VEHICLES ARE EQUIPPED WITH TWO SEPARATE GAUGES.

THE AIR APPLICATION GAUGE PROVIDES A MEANS OF CHECKING THE DELIVERY AIR PRESSURE TO BRAKES DURING BRAKE APPLICATION.



LOW AIR PRESSURE WARNING DEVICES ARE PRESSURE OPERATED ELECTRO-PNEUMATIC SWITCHES THAT ARE DESIGNED TO PROVIDE WARNING TO THE DRIVER IN THE EVENT AIR PRESSURE IN THE SERVICE BRAKE SYSTEM IS BELOW A SAFE MINIMUM FOR NORMAL OPERATION. THE DEVICE, AVAILABLE IN VARIOUS PRESSURE SETTINGS, IS NOT ADJUSTABLE, AND IS USED IN CONJUNCTION WITH A DASH-MOUNTED LAMP OR WARNING BUZZER OR BOTH, OR IN OLDER VEHICLES A DROP ARM “WIG-WAY”.


WITH BRAKES APPLIED
AND PRESSURE BETWEEN 80-90 PSI
MARK
MEASURE TO LOCKING NUT
MEASURE TO CENTER
OF CLEVIS PIN

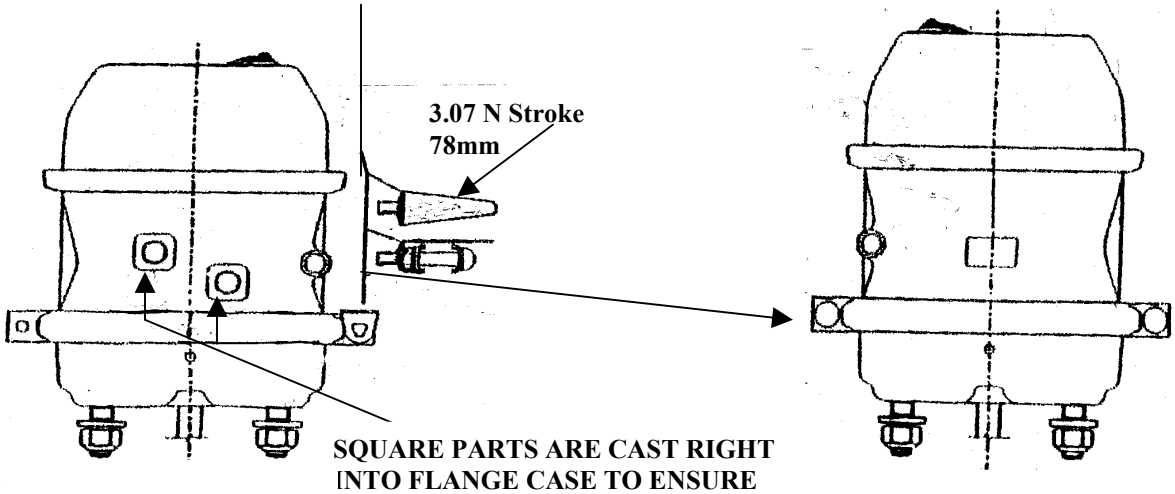

MEASURE STROKE WITH BRAKES APPLIED
AIR PRESSURE SHOULD BE BETWEEN
80-90 PSI
< 90°
LESS THAN
90 DEGREES

SECTION 5-BRAKES-(Continued)

SPRING BRAKE CHAMBER

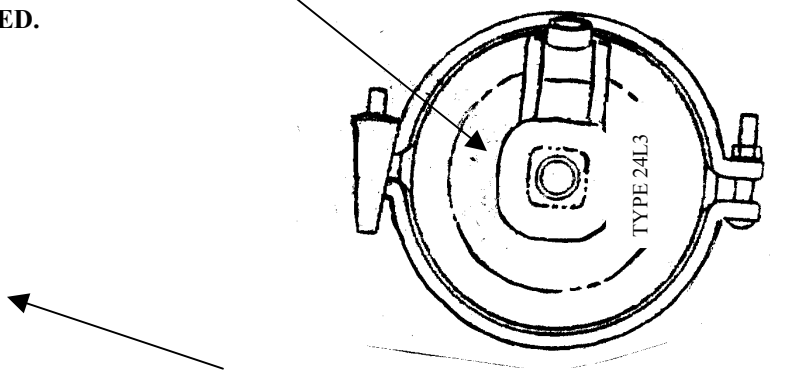
STANDARDIZED TRAPEZOIDAL SHAPED ID –TAG SECURED TO SERVICE CHAMBER CLAMP BAND BOLTS

SERVICING INSTRUCTIONS ARE EMBOSSED INTO THE FLANGE CASE FOR WHEN DIAPHRAGM REPLACEMENT IS REQUIRED.



SQUARE PARTS ARE CAST RIGHT INTO FLANGE CASE TO ENSURE TAMPER PROOF IDENTIFICATION THAT IS PRONOUNCED AND EASILY DETECTABLE.

SERVICING INSTRUCTIONS ARE STAMPED INTO THE PRESSURE CAP FOR WHEN DIAPHRAGM REPLACEMENT IS REQUIRED.



SQUARE EMBOSSMENT IS RAISED A FULL HALF INCH FROM THE TOP OF THE PRESSURE CAP TO ENSURE TAMPER – PROOF IDENTIFICATION THAT IS PRONOUNCED AND EASILY DETECTABLE.

SECTION 6-ELECTRICAL SYSTEMS

A. HORN

Check the horn to make sure that it is securely fastened and works properly.

REJECT vehicle when:

a) Horn is not securely fastened
b) Horn does not function properly (must be audible under normal conditions at a distance of not less than 200 feet).

B. ELECTRICAL

All switches should function properly.

REJECT vehicle when:

***ANY** original equipment switch fails to function as designed.

C. ELECTRICAL WIRING

Check all wiring to make sure it is not chaffed, bare or contacting sharp objects.

REJECT vehicle when:

Wiring insulation is chafed, rubbed bare, or shows any evidence of burning or short circuiting.

D. ELECTRICAL CONNECTIONS

All connectors should be tight and secure.

ADVISE vehicle when:

Connections are not tight and secure.

E. AUTOMATIC TRANSMISSIONS STARTING SWITCH

1. Check neutral starting system to determine that starter operates only with gear selector in "P" and "N". Set parking brake, place wheel blocks. With foot brake applied, turn on ignition switch.

REJECT vehicle when:

Starter operates with gear selector in any gear other than "P" and "N".

SECTION 7 – LIGHT SYSTEM

A. ALL ORIGINAL EQUIPMENT LIGHTS MUST BE OPERATIONAL.

Check all lights for secure mounting, proper location, and correct color.

REJECT vehicle when:

a) Lights are missing, not secured, or emitting light of improper color.
b) Lights are in wrong position, not operating and in case of headlights and auxillary lights, if not properly aimed (not more than 4" horizontal or 4" vertical aim off center) and for proper intensity.
c) The following requirements are not met:

1. Headlights

   a) White in color (**no exceptions**).
   b) Proper aiming (0 vertically, 0 horizontally preferred).
   c) Upper and lower beams.
   d) Colored after market headlight covers are present.
   e) Headlights above 54" from ground to center of headlight.

2. Fog Driving Lights or Auxiliary Headlight(s) OEM

   a) White, yellow **ONLY.**
   b) Properly aimed.
   c) Separate switch to operate.
   d) Tinted covers are not allowed.

3. Tail lights / Stop lights

   a) Red color only. (**Blue dots are illegal**.)
   b) Two required – one on each side at the rear of each vehicle.
   c) Mounted 15" to 70" in height.
   d) Colored lenses are not allowed.

4. Turn Signal Lights

   a) Required on each side of vehicle front and rear.
   b) Front; white, yellow or amber.
   c) Rear; red, yellow or amber.
   d) Switch must be capable of operation by driver and remain on without assistance when activated.

NOTE: **All exterior lights must be USDOT approved.**

SECTION 7 – LIGHT SYSTEM-(Continued)

5. Instrument Panel – Interior Lights

   a) Instrument panel shall be lighted whenever headlights or taillights are activated.
   b) High beam indicator must indicate when high beam lights are on.
   c) Turn signal indicator(s) to indicate when turn signals are in operation.

6. Back-up Lights/License Plate Light

   a) Back-up lights are not required – less than 80" wide – but if present; must be white and must not be on when vehicle moves forward.

   b) License plate lamp light; white without glare

7. Clearance Lights / Marker Lights / Reflectors

   a) Any light(s) or reflector(s) required under FMCSR 393.11 (See attached lighting chart).

NOTE: **Required lights cannot be obscured by any part of the vehicle or load.**

D. SCHOOL BUS LOADING LIGHTS

Check school bus loading lights for proper operation.

REJECT school bus when:

a) Yellow loading light front or rear fails to operate.
b) Red loading light front or rear fails to operate.

SECTION 7 – LIGHT SYSTEM-(Continued)

C. LIGHTING CHART-(LIGHTS REQUIRED ON ALL VEHICLES)

All lighting devices and reflectors required by Section 393 of the FMVSS (Federal Code) shall be operable.

LIGHT	LOCATION	HEIGHT	COLOR	NUMBER
Head Lamp (not required on trailer)	**Front**	**22" – 54"**	**White**	**2 or 4**
Tail Lamp	**Rear**	**15" – 72"**	**Red**	**2 or more**
Turn Signal Lamp	**Front (not less than 4" from low-beam head lamp-SE J 588e)**	**15" – 83"**	**Amber**	**2 or more**
	Rear (not required on truck-tractor if front turn signals are double-laced and visible from the rear)	**15" – 83"**	**Red or Amber**	**2 or more**
Hazard Lamp (same lamp as turn signal)	**Front**	**15" – 83"**	**Amber**	**2 or more**
	Rear	**15" – 83"**	**Red or Amber**	**2 or more**
Stop Lamp	**Rear**	**15" – 72"**	**Red**	**2 or more**
License Plate Lamp	**Rear, at license plate**	**----------**	**White**	**1 or more**
Side Marker Lamp	**Side near front**	**15"minimum**	**Amber**	**1 each side**
	Side near rear (not required on truck-tractor)	**15"minimum**	**Red**	**1 each side**
Backup Lamp (not required on trailer)	**Rear**	**----------**	**White**	**1 or more**
Rear Reflector	**Rear**	**15" – 60"**	**Red**	**2 or more**
Side Reflector	**Side near front**	**15" – 60"**	**Amber**	**1 each side**
	Side near rear (not required on truck-tractor)	**15" – 60"**	**Red**	**1 each side**
Intermediate Side Lamp (if vehicle overall length is 30' or greater)	**Side near center**	**15"minimum**	**Amber**	**1 each**
Intermediate Side Reflector (if vehicle overall length is 30' or greater)	**Side near center**	**15" – 60"**	**Amber**	**1 each**
Parking Lamp (only if vehicle is less than 80" wide)	**Front (not required on trailer)**	**15" – 72"**	**Amber or White**	**2 or more**

NOTE: **No light colors other than those described on the chart are allowed.**

SECTION 7 – LIGHT SYSTEM (Continued)

D. REQUIRED ON ALL VEHICLES 80" OR WIDER

LIGHT	LOCATION	HEIGHT	COLOR	NUMBER
Identification Lamp	Front, spaced 6" – 12" On center (not required on trailer)	**As high as practical**	Amber	3
	Rear (not required on truck/tractor)	**As high as practical**	Red	3
Clearance Lamp	Front, at widest point	As high as practical	Amber	2
	Rear, at widest point (not required on truck/tractor)	As high as practical	Red	2

NOTE: **No light colors other than those described on the chart are allowed.**

SECTION 8 - EXHAUST SYSTEM

The exhaust system includes the exhaust manifold, exhaust pipe, (headers) and including the mufflers, and the tail pipes. Rusted or corroded surfaces should be given particular attention. Holes in the system, made by the manufacturer for drainage is not cause for rejection.

A. EXHAUST SYSTEM

1) Check the exhaust system to determine if there is leaking at a point forward of or directly below the driver/sleeper compartment.

2) Check the bus exhaust system to determine if there is any leaking or discharging regarding the following.

    a. Gasoline powered – excess of six (6) inches forward of the rearmost part of the bus.
    b. Other than gasoline powered – in excess of 15 inches forward of the rearmost part of the bus.
    c. Other than gasoline powered – forward of a door or window designed to be opened. (Exception: emergency exits).

3) Check the exhaust system for correct location to determine that the system will not burn, char, or damage any electrical wiring, the fuel supply or any combustible part of the motor vehicle.

    REJECT vehicle when:

    a) Vehicle has no muffler.
    b) There are loose or leaking joints.
    c) There are leaks of any kind on any part of the system including at a point forward of/or directly below the driver/sleeper compartment.
    d) Tailpipe is pinched.
    e) Any elements of exhaust system are not securely fastened.
    f) There is a muffler cutout or similar device.
    g) Exhaust stacks are so located that an individual may be burned upon entering or leaving the vehicle including damage to any electrical wiring, the fuel supply or any combustible part of the motor vehicle.
    h) Any part of the exhaust system passes through the occupant compartment.
    i) Tail pipes do not extend to or beyond the rear of the cab or passenger area, which extends behind driver's seat.
    j) On motor homes, vans, etc.: Tail pipe must extend to outer periphery of vehicle.

    NOTE: ***On some larger vehicles such as school buses, the extremely long piping system requires the use of flexible "slip" joints to allow for expansion and contraction. These are designed not to leak when warm.***

SECTION 9-FUEL SYSTEM

A. FUEL SYSTEM

Examine the fuel tank, fuel tank support straps, filler tube (rubber, plastic, metal) tube clamps, fuel tank vent hoses or tubes, filler housing drain, over-flow tubes, and filler cap. No part of the system may extend past the widest part of vehicle.
49CFR 393.65 (Code of Federal Regulations)

All motor fuel cells must be U.S. Department of Transportation approved.

1) Check for leaks at any point of the system.
2) Check the fuel tank filler cap.
3) Check the system for secure fasteners and supporting hardware.
4) Check the crossover line for proper protection.

REJECT vehicle when:

a) There is fuel leakage at any point in the system.
b) The fuel tank filler cap is missing.
c) Any part of the system is not securely fastened or supported.
d) Crossover line is not protected and drops more than two (2) inches below fuel tanks.

SECTION 10-VEHICLE INTERIOR

A. SEATS AND SEAT BELTS

Check seats for proper operation of the adjusting mechanism and to see that the seats are securely anchored to the floor.

REJECT vehicle when:

a) Seats are not securely anchored to floor pan.
b) Seat adjusting mechanism slips out of set position.
c) Seat back is broken or disconnected from seat base so that it will not support a person's full weight.
d) Seat belts per OEM Specifications are missing or ineffective.
e) Seat belts show frayed or severed fabric.

B. FLOOR PAN

Check floor pan in both occupant compartments and sleeper berth(s) for rusted-out areas or holes, which could permit entry of, exhaust gases, or which would not support occupants adequately.

REJECT vehicle when:

Floor pan front or rear is rusted through sufficiently to cause a hazard to an occupant, or so that exhaust gases could enter the occupant area of the vehicle.

C. FRAME

1) Check the frame. Repairs must meet OEM Specifications. Frame welds must be certified.

REJECT vehicle when:

There is any, broken, rusted through, or cracked frame components.

2) Check the frame for any loose broken or missing fasteners including fasteners attaching functional components such as engine, transmission, steering gear, suspension, body parts and fifth wheel.

REJECT vehicle when:

Frame has evidence of loose, broken or missing fasteners including fasteners attaching functional component's such as engine, transmission, steering gear, suspension, body parts and fifth wheel.

SECTION 10-VEHICLE INTERIOR

D. WINDSHIELD WASHER SYSTEM

Check for proper operation of hand or foot control and that an effective amount of fluid delivered to the outside of the windshield opposite each outboard front seating position.

REJECT vehicle when:

System fails to function properly.

E. WINDSHIELD DEFROSTER

Check the defroster for proper operation. Vehicles manufactured after January 1, 1969 must be equipped with windshield defroster systems.

REJECT vehicle when:

Defroster fan fails to function.

F. WINDSHIELD WIPERS

Check wipers for proper operation, for damaged, torn or hardened rubber elements of blades, metal parts of wiper blades or arms.

REJECT vehicle when:

a) Either wiper fails to function properly. If vehicle was originally equipped with two windshield wipers, both must function properly.
b) Blades smear or streak windshield.
c) Blades show signs of physical breakdown of rubber wiping element.

G. SPEEDOMETER

Check vehicle to be sure that it is equipped with properly functioning speedometer.

REJECT vehicle when:

Speedometer is not functional or is disconnected.

SECTION 11-VEHICLE EXTERIOR

A. PROTRUDING METAL

Check for torn metal parts, moldings, etc. that may protrude from vehicle.

REJECT vehicle when:

Torn metal, glass or other loose or dislocated parts protrude from the surface of the vehicle causing a safety hazard.

B. BUMPERS

Check for condition and presence of front and rear bumpers.

REJECT vehicle when:

a) Front bumper is missing, or is misplaced, loosely attached, or broken or torn so that a portion is protruding creating a hazard.
b) Rear end protection, (rear impact guards / bumpers) are missing.

If bed of vehicle is more than 30 inches off of the ground, Federal Motor Carrier Safety Regulation 393.86, requires rear end protection. (See 49 CFR 393.86)

C. FENDERS

Check for removal of front fenders.

REJECT vehicle when:

Any fender has been removed or altered to such extent that it does not cover the entire width of the tire and wheel.

D. DOORS

Check door latches, locks, hinges and handles for proper operation, improper adjustment, and broken or missing components. All doors must open and close tightly.

REJECT vehicle when:

a) Doors are broken or hinges are sagging so that the door cannot be tightly closed.
b) Doors do not open properly or close tightly.
b) Doors or door parts are missing.

SECTION 11-VEHICLE EXTERIOR-(Continued)

E. HOOD / LATCH

Check hood and hood latch for proper operation.

REJECT vehicle when:

a) Hood is missing. Hood latch does not securely hold hood in its proper fully closed position. Secondary or safety catch does no function properly.
b) Latch release mechanism or its parts are broken, missing or badly adjusted so that the hood cannot be opened and closed properly.

F. EXTERIOR REARVIEW MIRROR(S)

Check mirrors.

REJECT vehicle when:

a) Right or left exterior mirror is missing.
b) Mirror is difficult to adjust or will not maintain a set adjustment.
c) Mirror(s) protrude outside of line offering satisfactory rear vision. Allowance should be made for truck tractors inspected without a trailer attached and the extra width the mirrors protrude to provide rearward visibility around the trailer.
d) Mirror is cracked, has sharp edges, is pitted or clouded to the extent that rear vision is obscured.

G. EXTERIOR CROSS VIEW MIRROR *(SCHOOL BUS ONLY)*

From the driver's position, visually inspect the convex cross view mirror for a clear view of the front bumper and area in front of the bus. Inspect for stable mounting, cracks, and sharp edges.

REJECT school bus when:

a) Exterior cross view mirror is missing.
b) Mirror is loosely mounted.
c) Mirror will not maintain a set adjustment.
d) Mirror is cracked, broken, has sharp edges, is pitted or clouded to the extent that vision is obscured.

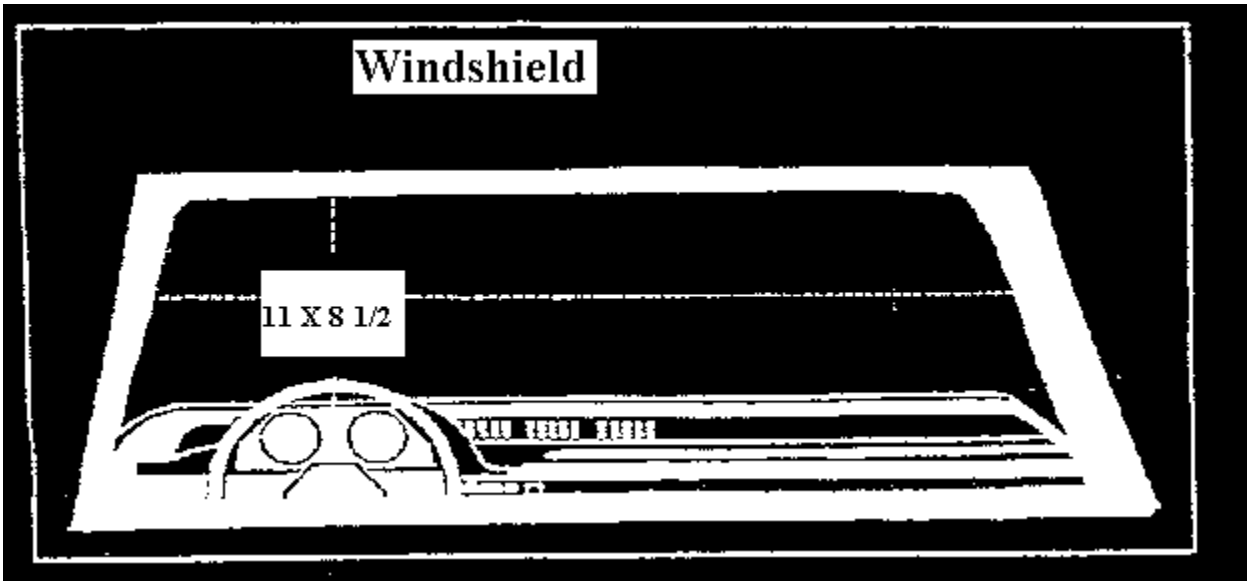
SECTION 12-WINDOWS AND GLAZING

A. WINDSHIELD

A windshield is required in all commercial vehicles and must have the marking AS-1, AS-10 or AS-11. Check windshield for unauthorized tinting, signs, posters or other non-transparent materials.

REJECT vehicle when:

a) There is outright breakage (glass shattered either on the inside or outside surface or glass is broken leaving sharp or jagged edges).
b) There is damage to windshield that is more than 3/4 inch in diameter in any area of the windshield.
c) There are sandpits or discoloration, which interfere with the driver's vision.
d) Windshield is missing.
e) There are any cracks originating from the same or separate points with a cumulative total of 24 inches or more in other than the acute area.
f) There is **ANY** damage in the acute area.
g) Any tinting, signs, posters, or other non-transparent material is discovered, that extends more than three (3) inches to the right or left of the center-top of windshield or more than two (2) inches down from the top edge of windshield.
h) Any crack(s) run the full length of the windshield, either horizontally or vertically.



The acute area on the windshield is measured by bisecting the windshield horizontally, with an intersecting line drawn through the middle of the steering column. An area of 11" in width and 8 ½" in height (sheet of paper) is then measured at the cross section. If there is any damage within this area, larger than 1/4", the windshield must be rejected and the windshield must be replaced.

SECTION 12-WINDOWS AND GLAZING-(Continued)

B. VEHICLE GLAZING

Check all glass for unauthorized materials or conditions that obscure driver's vision. All other glass in the vehicle must be marked AS-1 or AS-2 or AS-3. Federal Motor Carrier Safety Regulations do not allow the front left and right side windows to be glazed/tinted darker than 70% light transmittance, see 49 CFR 393.60.

REJECT vehicle when:

a) Any tint or other non-transparent material has been added to the windshield below the horizontal line two (4) inches from the top of the windshield and allows less than 70% light transmittance below AS-1 mark on upper corner of windshield.
b) Any tinting or other non-transparent material has been added to the windows to the immediate left or right of the driver's seat. (Right front or left front windows).
c) Any windows are covered by or treated with a material, which presents a metallic or mirrored appearance when viewed from the outside of the vehicle.

NOTE: ***Tinting means any after market material such as spray or plastic or any other substance applied to the surface of the glass. Federal standards of 70% light transmittance apply to windshields and the immediate left and right front windows.***

C. LEFT OR RIGHT FRONT WINDOWS

1) Check operation of window at driver's left side. Window must open readily even though the vehicle has approved turn signals.

REJECT vehicle when:

a) Driver's window cannot be opened to permit arm signal.
b) Driver's door glass is broken, shattered, or jagged.

2) Check side windows for tint

REJECT vehicle when:

Tint allows less than 70% light transmittance.

NOTE: Windows behind front driver/passenger doors are exempt from tint standards.

REFERENCE CHART

ENGLISH TO METRIC CONVERSION: LENGTH

To convert inches (ins.) to millimeters (mm): multiply number of inches by 25.4

To convert millimeters (mm) to inches (ins.): multiply number of millimeters by .04

Inches	Decimals	Millimeters
1/64	0.015625	0.3969
1/32	0.03125	0.7937
3/64	0.046875	1.1906
1/16	0.0625	1.5875
5/64	0.078125	1.9844
3/32	0.09375	2.3812
7/64	0.109375	2.7781
1/8	0.125	3.1750
9/64	0.140625	3.5719
5/32	0.15625	3.9687
11/64	0.171875	4.3656
3/16	0.1875	4.7625
13/64	0.203125	5.1594
7/32	0.21875	5.5562
15/64	0.234375	5.9531
1/4	0.25	6.3500
17/64	0.265625	6.7469
9/32	0.28125	7.1437
19/64	0.296875	7.5406
5/16	0.3125	7.9375
21/64	0.328125	8.3344
11/32	0.34375	8.7312
23/64	0.359375	9.1281
3/8	0.375	9.5250
25/64	0.390625	9.9219
13/32	0.40625	10.3187
27/64	0.421875	10.7156
7/16	0.4375	11.1125
29/64	0.453125	11.5094
15/32	0.46875	11.9062
31/64	0.484375	12.3031
1/2	0.5	12.7000
33/64	0.515625	13.0969
17/32	0.53125	13.4937
35/64	0.546875	13.8906
9/16	0.5625	14.2875
37/64	0.578125	14.6844
19/32	0.59375	15.0812
39/64	0.609375	15.4781
5/8	0.625	15.8750
41/64	0.640625	16.2719
21/32	0.65625	16.6687
43/64	0.671875	17.0656
11/16	0.6875	17.4625
45/64	0.703125	17.8594
23/32	0.71875	18.2562
47/64	0.734375	18.6531
3/4	0.75	19.0500
49/64	0.765625	19.4469
25/32	0.78125	19.8437
51/64	0.796875	20.2406
13/16	0.8125	20.6375
53/64	0.828125	21.0344
27/32	0.84375	21.4312
55/64	0.859375	21.8281
7/8	0.875	22.2250
57/64	0.890625	22.6219
29/32	0.90625	23.0187
59/64	0.921875	23.4156
15/16	0.9375	23.8125
61/64	0.953125	24.2094
31/32	0.96875	24.6062
63/64	0.984375	25.0031

Inches to millimeters inches	mm	Inches to millimeters inches	mm
0.0001	0.00254	0.6	15.24
0.0002	0.00508	0.7	17.78
0.0003	0.00762	0.8	20.32
0.0004	0.01016	0.9	22.86
0.0005	0.01270	1	25.4
0.0006	0.01524	2	50.8
0.0007	0.01778	3	76.2
0.0008	0.02032	4	101.6
0.0009	0.02286	5	127.0
0.001	0.0254	6	152.4
0.002	0.0508	7	177.8
0.003	0.0762	8	203.2
0.004	0.1016	9	228.6
0.005	0.1270	10	254.0
0.006	0.1524	11	279.4
0.007	0.1778	12	304.8
0.008	0.2032	13	330.2
0.009	0.2286	14	355.6
0.01	0.254	15	381.0
0.02	0.508	16	406.4
0.03	0.762	17	431.8
0.04	1.016	18	457.2
0.05	1.270	19	482.6
0.06	1.524	20	508.0
0.07	1.778	21	533.4
0.08	2.032	22	558.8
0.09	2.286	23	584.2
0.1	2.54	24	609.6
0.2	5.08	25	635.0
0.3	7.62	26	660.4
0.4	10.16	27	685.8
0.5	12.70		

INDEX